

[0076] FIG. 6c shows a wafer scale package comprising the four substrates 200, 300, 400, 600 shown in FIG. 6b. They are stacked in an axial direction and connected to one another. For connection of the spacer substrate 600 to the lens and base substrate 300, 200, a preferably conductive adhesive is used.

[0077] For production of the individual optical devices 10, the package 100 is diced along planes P running in the axial direction.

[0078] If the lens elements are suitably covered, the coating can also be done after stacking the lens and spacer substrates 300 and 600 onto one another.

[0079] In a modification of the process shown in FIG. 6a-c, in a first intermediate step grooves are formed along planes P, and these grooves are then filled with a conductive material. The package is then diced along the planes P, such that the conductive material constitutes the lateral end faces of the individual modules. This makes it possible to manufacture a device as shown in FIG. 4 on wafer scale. In this case, no coating within the cavities is required.

[0080] Though only devices having a base and a lens substrate have been described, there could be one or more additional substrate portion carrying one or more lens elements. Optionally there are additional spacers to space the substrates from one another.

1. An optical module for an electro-optical device including a functional element arranged on a base substrate portion, in particular for a camera device having an image capturing element, the optical module comprising:

- at least one generally transparent lens substrate portion with at least one lens element, and
- at least one spacer,

wherein the optical module is intended to be placed on top of the base substrate portion with the at least one spacer keeping the lens substrate portion at a predetermined distance from the base substrate portion, and

further comprising an electrically conductive shield which is integral part of the module.

2. Optical module as claimed in claim 1, wherein the spacer is at least in parts electrically conductive, is made of a conductive material or comprises a conductive coating.

3. Optical module as claimed in claim 2, wherein the at least partly electrically conductive spacer comprises a generally non-conductive basic body and a conductive coating applied to at least one of an inner side surface, and an outer side surface of the spacer.

4. Optical module as claimed in claim 2, wherein the spacer comprises a basic body which is made of or comprises a conductive material.

5. Optical module as claimed in claim 1, wherein said at least one spacer has a generally planar shape with a front surface and a rear surface, and a generally cylindrical through-hole between the front and rear surfaces, an inner side surface of the spacer being formed by the side walls of the through-hole, wherein the front surface of the spacer is attached to a rear surface of the lens substrate portion.

6. Optical module as claimed in claim 1, further comprising a conductive coating applied to at least one surface of the lens substrate portion.

7. Optical module as claimed in claim 1, further comprising a baffle defining a three dimensional passage for light, said baffle being attached to a front surface of the lens substrate.

8. Optical module as claimed in claim 7, wherein the baffle has at least one side wall projecting beyond a rear surface of the lens substrate portion, said at least one side wall constituting said at least one spacer.

9. Optical module as claimed in claim 8, wherein at least one of an inner surface or an outer surface of the at least one side wall of the baffle comprises a conductive coating.

10. Optical module as claimed in claim 1, wherein the at least one lens element is arranged on at least one of a rear surface and a front surface of the lens substrate portion.

11. Optical module as claimed in claim 1, wherein the shield comprises, on at least one of a front surface and a rear surface of the lens substrate portion, an optically non-transparent conductive coating with an aperture for the transmission of light.

12. Optical module as claimed in claim 1, wherein the at least one spacer is attached to the lens substrate portion by means of a conductive glue.

13. Camera device comprising:

an image capturing element arranged on a base substrate portion and

an optical module including at least one generally transparent lens substrate portion with at least one lens element and at least one spacer and an electrically conductive shield,

wherein said optical module is placed on top of the base substrate portion such that the spacer keeps the lens substrate portion at a predetermined distance from the base substrate portion.

14. Camera device as claimed in claim 13, wherein the shield is connected to the base substrate portion, in particular to electrically conductive parts thereof, in an electrically conductive manner.

15. Camera device as claimed in claim 13, wherein the optical module is attached to the base substrate portion by means of a conductive glue.

16. Camera device as claimed in claim 13, wherein a closed cavity is formed in between the base substrate portion and the lens substrate portion.

17. Camera device as claimed in claim 16, wherein the shield is arranged in the cavity.

18. A wafer scale package, comprising:

a generally transparent lens substrate with a plurality of lens elements, and

at least one spacer layer attached to said lens substrate, said spacer layer comprising a plurality of separated or interconnected spacers, and

at least one electrically conductive shield which is integral part of at least one of the spacer layer and the lens substrate.

19. Wafer scale package as claimed in claim 18, wherein the spacer layer is at least in parts electrically conductive.

20. Wafer scale package as claimed in claim 18, wherein the spacer layer comprises at least one generally non-conductive basic body and a conductive coating applied to at least the inner side surfaces of the spacers.

21. Wafer scale package as claimed in claim 18, wherein the spacer layer comprises at least one basic body which is made of or comprises a conductive material.

22. Wafer scale package as claimed in claim 18, further comprising a baffle substrate attached to a front surface of the lens substrate, the baffle substrate comprising a plurality of baffles defining three dimensional passages for light.